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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/866,092	05/23/2001	Mark Thomas McCormack	6136/54242 (25916-217)	5484
30764	7590	10/05/2004	EXAMINER	
SHEPPARD, MULLIN, RICHTER & HAMPTON LLP			LEE, EUGENE	
333 SOUTH HOPE STREET			ART UNIT	
48TH FLOOR			PAPER NUMBER	
LOS ANGELES, CA 90071-1448			2815	

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/866,092	<b>Applicant(s)</b> MCCORMACK ET AL.	
	<b>Examiner</b> Eugene Lee	<b>Art Unit</b> 2815	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 July 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, (1) an adhesive securing said first prefabricated integrated electronic component; (2) the first integrated electronic component within said first substrate surface cavity; and (3) said exposed portion of said second substrate surface includes a cavity (claim 25) must be shown or the feature(s) canceled from the claim(s).

Regarding (2), FIG. 9 does not show the integrated electronic component within said first substrate surface cavity but only on the surface of core 12. FIG. 13 shows the first integrated electronic component within a cavity, however, FIG. 13 does not show the vias that are also stated in claim 17. Regarding (3), the reasons are the same as (2) in that the vias and the cavity are not shown in the same drawing (as stated in claim 25). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the

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drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claims 28 and 29 are objected to because of the following informalities: in line 2 of both claims, there is a typographical error in the limitation “additionally comprising wherein said first prefabricated integrated electronic component.” Appropriate correction is required.

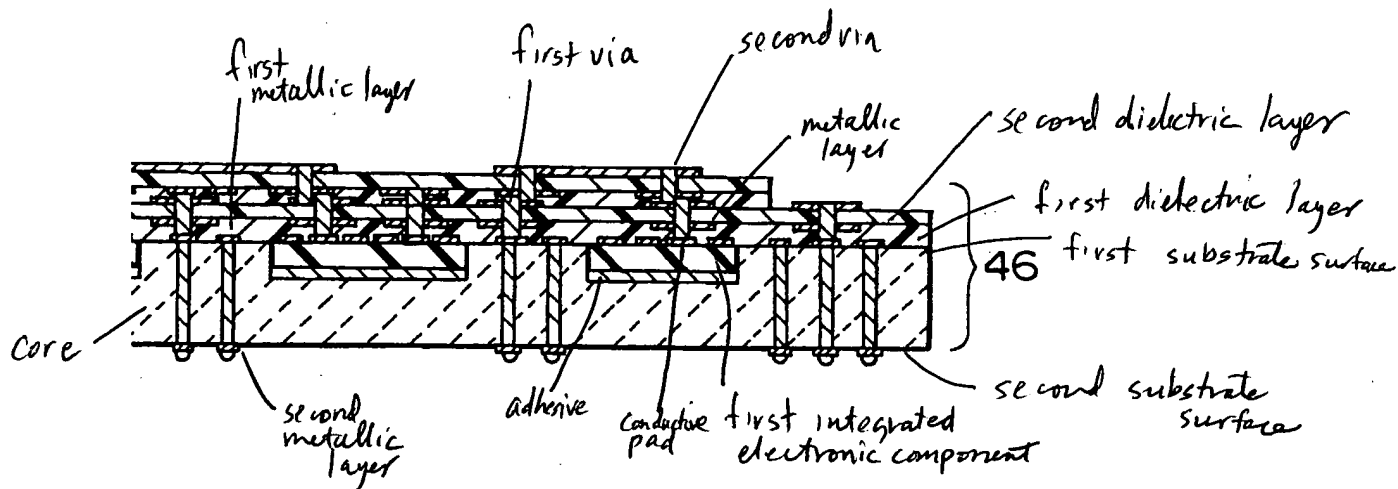
### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 17 thru 23, 27, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Miura et al. 5,565,706. Miura discloses (see, for example, FIG. 6) a multi-layer package board (multi-layer printed circuit board) comprising a package board (circuit board substrate) 46; ceramic substrate (core) 45 having a first substrate surface and a second substrate surface; LSI (first integrated electronic component) 35, spot facing portions (cavity) 37, silicone rubber (adhesive) 38, adhesive sheet (first dielectric layer) 11, copper wiring (metallic layer) 9a, via (electrically conductive first via) 17, insulating layer (second dielectric layer) 9c, and via (electrically conductive second via) 16.



Regarding claim 18, see figures wherein Miura discloses external output terminals (first metallic layer) 8 and external output terminals (second metallic layer) 28.

Regarding claim 27, see figures wherein Miura discloses external output terminals (conductive pad) 8 on top of the LSI 35.

Regarding claim 30, see FIG. 6 wherein Miura discloses one of the vias (at least one metal-lined via) 16 attached to LSI 33.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 24 thru 26, 28, 29, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. '706 as applied to claims 17-23, 27, and 30 above, and further in view of Wojnarowski et al. 5,703,400. Miura does not disclose said exposed portion of said

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second substrate surface including a cavity additionally comprising a second integrated electronic component disposed in said cavity. However, Wojnarowski discloses (see, for example, fig. 9) a module 212 comprising a chip (second integrated electronic component) 30 in a dielectric material 42. Having the chip 30 with a chip 10 in the same dielectric material 42 creates a multichip device that saves space and provides interconnection between the two chips. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have said exposed portion of said second substrate surface including a cavity additionally comprising a second integrated electronic component disposed in said cavity in order to create a multichip device that saves space and provides interconnection between two chips.

Regarding claims 28 and 29, see figures wherein Miura discloses external output terminals (conductive pad) 8 on top of the LSI 35.

Regarding claims 31 and 32, see FIG. 6 wherein Miura discloses one of the vias (at least one metal-lined via) 16 attached to LSI 33.

7. Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. '706 as applied to claims 17-23, 27, and 30 above, and further in view of Ma et al. 6,154,366. Miura does not disclose additionally comprising at least one metal-lined via extending through said metallic layer and through said first dielectric layer. However, Ma discloses (see, for example, 1d) a package comprising a die 106 and multiple conductive traces (at least one metal-lined via) 124. The multiple conductive traces transmit signals to the die. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have additionally at least one metal-lined via extending through said metallic layer and

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through said first dielectric layer in order to transmit more signals to the integrated electronic component.

***Response to Arguments***

8. Applicant's arguments with respect to claims 17-34 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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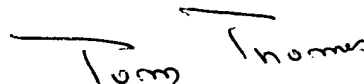
### INFORMATION ON HOW TO CONTACT THE USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 571-272-1733. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eugene Lee  
September 30, 2004

A handwritten signature in black ink that reads "Tom Thomas". The signature is written in a cursive style with a horizontal line above the first name.

TOM THOMAS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800